

WHAT IS CLAIMED IS:

1. A printing system comprising a pod, a detachable printing device, a substrate, a positioner and a preservation device, wherein:

the pod comprises a receptacle for reversibly attaching an attachment portion of the printing device;

the printing device comprises a reservoir containing a liquid comprising a predetermined agent and in fluid connection with the reservoir, a capillary comprising an axial bore having proximal and distal openings to ambient pressure and a printing tip comprising the distal opening and which prints the agent on the substrate;

the positioner moves the pod relative to the substrate; and

the preservation device is within, containing or in contact with the printing device and preserves the capability of the printing device to print the agent on the substrate over long-term storage.

2. A printing system according to claim 1, comprising a pod, a detachable printing device, a substrate, a positioner and a hermetic barrier device, wherein:

the pod comprises a receptacle for reversibly attaching an attachment portion of the printing device;

the printing device comprises a reservoir having a proximal opening to ambient pressure, the reservoir containing a liquid comprising a predetermined analyte agent, and a capillary comprising an axial bore having a proximal opening in fluid connection with the reservoir and a distal opening open to ambient pressure, and a printing tip comprising the distal opening operative to print the agent on the substrate;

the positioner is operative to reversibly urge the capillary along its longitudinal axis toward the substrate; and

the hermetic barrier device being movable between a closed position and an open position, wherein in the closed position the barrier device is operative to preserve the capability of the printing device to print the agent on the substrate over long-term storage of the printing device, wherein in the open position the barrier device is operative to permit printing by the system of the analyte on the substrate, wherein the system is operative to print an ordered analytical array whereby the positioner urges the capillary along its longitudinal

axis toward the substrate then decelerates the capillary to move the agent through the bore, out the tip and onto the substrate.

3. A printing system comprising a pod, a detachable ganged plurality of printing devices,
5 a substrate and a positioner, wherein:

the pod comprises a receptacle for reversibly attaching an attachment portion of the printing devices;

each of the printing devices comprises a reservoir containing a liquid comprising a unique agent and in fluid connection with the reservoir, a capillary comprising an axial bore
10 having proximal and distal openings to ambient pressure and a printing tip comprising the distal opening and which prints the agent on the substrate; and

the positioner moves the pod relative to the substrate.

4. A printing system of claim 3 further comprising a motion resistor operatively joined
15 to the capillary and providing an incomplete resistance to motion of the capillary along its longitudinal axis, wherein the resistor is selected from a plurality of springs, an elastomeric membrane and the weight of the capillary.

5. The printing system of claim 3 further comprising a register comprising a guide which
20 contacts a registration portion of each of the printing devices, distal to the attachment portion, and moves the tip relative to the substrate.

6. A printing system comprising a printing device comprising a wire bonding capillary containing a liquid comprising a predetermined agent and comprising an axial bore having
25 proximal and distal openings and a printing tip comprising the distal opening and which prints the agent.

7. The printing system of claim 6 comprising a ganged plurality of wire bonding capillaries, each containing a liquid comprising a different agent and comprising an axial bore
30 having proximal and distal openings and a printing tip comprising the distal opening and which prints the agent.

8. The printing system of claim 2, wherein the agent is a member of a chemical library.
9. The printing system of claim 2, wherein the ordered analytical array is a high-density
5 array.
10. The printing system of claim 2, wherein the analyte is a polymer selected from the group consisting of a polynucleotide and a polypeptide.
- 10 11. The printing system of claim 2, wherein the analyte is a polymer selected from the group consisting of a polynucleotide and a polypeptide, and the polymer is at least 50 monomer units in length.
12. The printing system of claim 2, wherein the system is a contact printing system
15 operative to print whereby the positioner urges the capillary along its longitudinal axis toward the substrate to contact the substrate and thereby decelerating the capillary to move the agent through the bore, out the tip and onto the substrate.
13. The printing system of claim 2, wherein the bore tapers toward the distal opening of
20 the tip.
14. The printing system of claim 2, wherein the system suffers less than a 20% degradation in printing capacity over the long-term storage.
- 25 15. The printing system of claim 2, wherein the substrate comprises a homogeneous glass surface.
16. The printing system of claim 2 wherein the printing device is one of a detachable ganged plurality of printing devices, each comprising a reservoir containing an agent unique
30 to the reservoir.

17. A method for printing an agent on a substrate comprising the step of printing an agent with the printing system of claim 2 by decelerating the capillary to move the agent through the bore, out the tip and onto the substrate.

- 5 18. A method for printing an agent on a substrate comprising the step of printing an agent with the printing system of claim 2, by the positioner urging the capillary along its longitudinal axis toward the substrate to contact the substrate and thereby decelerating the capillary to move the agent through the bore, out the tip and onto the substrate.

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